

#### ABSTRACT

A member is obtained by forming a  $\text{Y}_2\text{O}_3$  black spray coating on a surface of a substrate or covering the surface of the substrate with a  $\text{Y}_2\text{O}_3$  black spray coating through an undercoat or a middle layer. This coating has good heat characteristics and is good in the resistance to damaging through a high hardness. The  $\text{Y}_2\text{O}_3$  black spray coating is produced by subjecting white  $\text{Y}_2\text{O}_3$  powdery material to a plasma spraying in an inert gas atmosphere containing substantially no oxygen or by forming a  $\text{Y}_2\text{O}_3$  white spray coating and then irradiating an electron beam or a laser beam to this coating to melt at least a part of the white coating under heating to thereby smoothen denseness and blacken the surface of the coating.